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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/816,834	04/05/2004	Tetsuya Osaka	0171-1074PUS1	2712

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EXAMINER

LEADER, WILLIAM T

ART UNIT	PAPER NUMBER
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1742

DATE MAILED: 12/15/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

# Office Action Summary

Application No.

10/816,834

Applicant(s)

OSAKA ET AL.

Examiner

William T. Leader

Art Unit

1742

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --  
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

## Status

- 1) ☐ Responsive to communication(s) filed on \_\_\_\_.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

## Disposition of Claims

- 4) ☒ Claim(s) 1-6 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-6 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_ are subject to restriction and/or election requirement.

## Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 05 April 2004 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

## Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some \* c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

## Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)  
Paper No(s)/Mail Date 4-5-2004.
- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date. \_\_\_\_.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: \_\_\_\_.

### DETAILED ACTION

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

3. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

4. Claim 2 is rejected under 35 U.S.C. 103(a) as being unpatentable over the admitted prior art in view of Filas et al (6,495,019).

5. The admitted prior art relied on is that discussed on pages 1-3 of the specification under the heading "Background of the Invention" and shows that it is known to form a soft magnetic thin film of a cobalt and iron-based alloy by electroplating. The admitted prior art shows that alloys of cobalt and iron alone as well as cobalt and iron combined with other elements such as nickel and boron are known.

6. The process recited in claim 2 differs from the electrodeposition processes of the admitted prior art by reciting the use of a soluble anode in a plating solution containing cobalt ions and divalent iron ions. (It is noted that the claim does not require the soluble anode to be made of either cobalt or iron.) The Filas et al patent discloses the electrodeposition of an alloy containing cobalt and iron. The composition of the electroplating bath is given in Table I. Filas recognizes that oxidation of  $\text{Fe}^{+2}$  to  $\text{Fe}^{+3}$  is undesirable and should be reduced (column 8, lines 40-43). Filas et al teach that a soluble iron anode is preferred over an insoluble anode because  $\text{Fe}^{+3}$  buildup would otherwise occur (column 8, lines 50-54).

7. The prior art of record is indicative of the level of skill of one of ordinary skill in the art. It would have been obvious at the time the invention was made to have utilized a soluble anode in the electroplating processes of the admitted prior art because undesirable  $\text{Fe}^{+3}$  buildup would have been avoided as taught by Filas et al.

8. Claims 1, 4, 5 and 6 are rejected under 35 U.S.C. 103(a) as being unpatentable over admitted prior art in view of Filas et al (6,495,019) as applied to claim 2 above, and further in view of the Lowenheim text *Electroplating* and Geus et al (4,869,792).

9. Lowenheim teaches that impurities may disengage from the anode and enter the bath. To avoid undesirable effects, Lowenheim discloses the use of anode bags or diaphragms (page 153). The Geus et al patent is directed to an electrodeposition process. Geus et al teach that undesirable reactions of the ions to be precipitated at one of the electrodes can be avoided by using a membrane (column 5, line 63 to column 6, line 1). The membrane may be a perfluorocarbon membrane provided with ion exchange groups such as those marketed by duPont (column 6, lines 9-13). This is the same type of membrane used by applicant in example 6 (page 14 of the specification). In a variant of the process, use is made of anodes consisting in full or in part of the metal to be precipitated. In this case, no membrane or salt bridge between anode and cathode is required (column 6, line 66 to column 7, line 9). It would have been obvious at the time the invention was made to have utilized a diaphragm in the processes of the admitted prior art because contamination of the deposit forming on the cathode would have been avoided as taught by Lowenheim and Geus et al. In particular, Geus et al recognize that the use of a diaphragm is an alternative to the use of a soluble anode as taught by Filas et al.

10. The composition ranges recited in figure 4 overlap those disclosed by the admitted prior art. The property recited in claim 5 would be expected to result from the process of the prior art as modified by the applied references. It is also noted that the admitted prior art shows that electroplated CoNiFe having the saturation flux density recited in claim 5 are known. See, for example, page 1, lines 28-32 of the specification. Applicant's claims are open to the inclusion of nickel.

11. Claim 3 is rejected under 35 U.S.C. 103(a) as being unpatentable over admitted prior art in view of Filas et al (6,495,019) and further in view of the Lowenheim text *Electroplating* and Geus et al (4,869,792) as applied to claims 1, 4, 5 and 6 above, additionally in view of Chen et al (6,776,891).

12. Claim <sup>3</sup>~~4~~ differs from the processes of the admitted prior art by reciting the use of pulse current. The Chen et al patent is directed to the deposition of a high saturation moment soft magnetic film. Chen et al teach that an effective method to reduce film coercivity is by promoting grain refinement (smaller grain size). See column 2, lines 12-13. Chen et al disclose that pulse and pulse reversal plating provides the advantages of a reduction of grain size and increased micro-uniformity (column 2, lines 51-56). It would have been obvious at the time the invention was made to have utilized pulse current in the processes of the admitted prior art because improved properties of the deposit would have been obtained as taught by Chen et al.

13. Claim 6 is rejected under 35 U.S.C. 102(e) as anticipated by or, in the alternative, under 35 U.S.C. 103(a) as obvious over Li et al (US 2003/0085131) or Cooper et al (US 2003/020925).


14. Claim 6 is a product-by-process claim reciting a soft magnetic thin film. Li et al disclose an electrodeposited FeCo thin film with a saturation magnetic flux density of 2.2 T in Table I. Cooper et al disclose a cobalt-iron alloy film having a saturation magnetization of at least about 2.30 Telsa. See the abstract. It is not apparent that the product recited by applicant differs from that of the references.

15. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Okada et al (6,794,063) discloses a plated magnetic film with excellent soft magnetic properties.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to William T. Leader whose telephone number is 571-272-1245. The examiner can normally be reached on Mondays-Thursdays and alternate Fridays, 7:30-4:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Roy King, can be reached on 571-272-1244. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

  
William Leader  
December 6, 2004

  
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SUPERVISORY PATENT EXAMINER  
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